

WE CLAIM:

1. An intracorporeal device comprising:
 - a) a helically wound coil having a plurality of windings forming a coil length; and
 - b) four joining elements disposed along the coil length, wherein each joining element couples two or more coil windings.
2. The intracorporeal device according to claim 1, wherein the plurality of joining elements includes at least 10 elements disposed along the coil length.
3. The intracorporeal device according to claim 1, wherein the plurality of joining elements form a non-uniform pattern along the coil length.
4. The intracorporeal device according to claim 3, wherein the plurality of joining elements has a density of joining elements per unit coil length that decreases along the coil length.
5. The intracorporeal device according to claim 4, wherein the density of joining elements per unit coil length decreases in the distal direction along the coil length.
6. The intracorporeal device according to claim 1, wherein the plurality of joining elements form a uniform pattern of joining elements along the coil length.
7. The intracorporeal device according to claim 1, wherein each joining element couples 3 to 10 coil windings.
8. The intracorporeal device according to claim 1, wherein each joining element is a discrete element aligned orthogonal to the windings.

9. The intracorporeal device according to claim 1, wherein each joining element is a discrete element having a width in the range of 0.1 to 0.5 mm and a length in the range of 0.1 to 1.5 mm.

10. An intracorporeal device comprising:

- a) a helically wound coil having a plurality of windings forming a coil length; and
- b) a plurality of joining elements disposed along the coil length, wherein each joining element only couples two or more coil windings.

11. The intracorporeal device according to claim 10, wherein the plurality of joining elements includes at least 10 elements disposed along the coil length.

12. The intracorporeal device according to claim 10, wherein the plurality of joining elements form a non-uniform pattern of joining elements along the coil length.

13. The intracorporeal device according to claim 12, wherein the plurality of joining elements has a density of joining elements per unit coil length that decreases along the coil length.

14. The intracorporeal device according to claim 13, wherein the density of joining elements per unit coil length decreases in the distal direction along the coil length.

15. The intracorporeal device according to claim 10, wherein the plurality of joining elements form a uniform pattern of joining elements along the coil length.

16. The intracorporeal device according to claim 10, wherein each joining element couples 3 to 10 coil windings.

17. The intracorporeal device according to claim 10, wherein each joining element is a discrete element aligned orthogonal to the windings.

18. The intracorporeal device according to claim 10, wherein each joining element is a discrete element having a width of 0.1 to 0.5 micrometer and a length of 0.1 to 1.5 mm.

19. An intracorporeal device comprising:

- a) a helically wound coil having a plurality of windings having an outer perimeter and forming a coil length; and
- b) a plurality of joining elements disposed on only a portion of the outer perimeter and along the coil length, wherein each joining element couples two or more coil windings.

20. The intracorporeal device according to claim 19, wherein the plurality of joining elements includes at least 10 elements disposed along the coil length.

21. The intracorporeal device according to claim 19, wherein the plurality of joining elements form a non-uniform pattern of joining elements along the coil length.

22. The intracorporeal device according to claim 21, wherein the plurality of joining elements has a density of joining elements per unit coil length that decreases along the coil length.

23. The intracorporeal device according to claim 19, wherein the plurality of joining elements form a uniform pattern of joining elements along the coil length.

24. The intracorporeal device according to claim 19, wherein each joining element couples 3 to 10 coil windings.

25. The intracorporeal device according to claim 19, wherein each joining element is a discrete element aligned orthogonal to the windings.

26. The intracorporeal device according to claim 19, wherein each joining element is a discrete element having a width of 0.1 to 0.5 mm and a length of 0.1 to 1.5 mm.

27. The intracorporeal device according to claim 19, wherein each joining element is disposed on less than 1/10 of the outer perimeter of each winding.

28. A medical device comprising:

- a) an elongate shaft;
- b) a helically wound coil having a plurality of windings having an outer perimeter and forming a coil length disposed about a portion of the elongate shaft; and
- c) a plurality of joining elements disposed on only a portion of the outer perimeter and along the coil length, wherein each joining element couples two or more coil windings.

29. The medical device according to claim 28, wherein the plurality of joining elements includes 10 elements disposed along the coil length.

30. The medical device according to claim 28, wherein the plurality of joining elements form a non-uniform joining element pattern along the coil length.

31. The medical device according to claim 30, wherein the plurality of joining elements has a density of joining elements per unit coil length that decreases along the coil length.

32. The medical device according to claim 28, wherein the plurality of joining elements form a uniform joining element pattern along the coil length.

33. The medical device according to claim 28, wherein each joining element couples 3 to 10 coil windings.

34. The medical device according to claim 28, wherein each joining element is a discrete element aligned orthogonal to the windings.

35. The medical device according to claim 28, wherein each joining element is a discrete element having a width of 0.1 to 0.5 mm and a length of 0.1 to 1.5 mm.

36. A guidewire comprising:

- a) an elongate shaft having a proximal end and an opposing distal end;
- b) a helically wound coil having a plurality of windings having an outer perimeter and forming a coil length disposed about a portion of the distal end; and
- c) a plurality of joining elements disposed on only a portion of the outer perimeter and along the coil length, wherein each joining element couples two coil windings.

37. The guidewire device according to claim 36, wherein the plurality of joining elements includes 10 elements disposed along the coil length.

38. The guidewire device according to claim 36, wherein the plurality of joining elements form a non-uniform joining element pattern along the coil length.

39. The guidewire device according to claim 38, wherein the plurality of joining elements has a density of joining elements per unit coil length that decreases along the coil length.

40. The guidewire device according to claim 36, wherein the plurality of joining elements form a uniform joining element pattern along the coil length.

41. The guidewire device according to claim 36, wherein each joining element couples 3 to 10 coil windings.

42. The guidewire device according to claim 36, wherein each joining element is a discrete element aligned orthogonal to the windings.

43. The guidewire device according to claim 36, wherein each joining element is a discrete element having a width of 0.1 to 0.5 mm and a length of 0.1 to 1.5 mm.

44. The guidewire according to claim 39, wherein the helically wound coil has a proximal end and a distal end and where the density of joining elements per unit length decreases from the proximal end to the distal end.

45. A guidewire comprising:

- a) an elongate shaft having a proximal end and an opposing distal end;
- b) a helically wound coil having a plurality of windings having an outer perimeter and forming a coil length disposed about a portion of the distal end; and
- c) a plurality of joining elements disposed on only a portion of the outer perimeter and along the coil length, wherein each joining element couples two coil windings;
- d) a second coil having a plurality of windings circumferentially disposed about the first coil wherein the joining elements couple a plurality of second coil windings to adjacent first coil windings.

46. The guidewire device according to claim 45, wherein the plurality of joining elements includes at least 10 elements disposed along the coil length.

47. The guidewire device according to claim 45, wherein the plurality of joining elements form a non-uniform joining element pattern along the coil length.

48. The guidewire device according to claim 45, wherein the plurality of joining elements form a uniform joining element pattern along the coil length.

49. The guidewire device according to claim 45, wherein each joining element couples 3 to 10 coil windings.

50. The guidewire device according to claim 45, wherein each joining element is a discrete element aligned orthogonal to the windings.

51. The guidewire device according to claim 45, wherein each joining element is a discrete element having a width of 0.1 to 0.5 mm and a length of 0.1 to 1.5 mm.

52. A process for forming an intracorporeal device comprising:
forming a plurality of joining elements on a helically wound coil having a plurality of windings that define an outer perimeter and form a coil length, wherein the joining elements are disposed on only a portion of the outer perimeter and along the coil length and each joining element couples two coil windings.

53. The process according to claim 52, wherein the forming a plurality of joining elements comprises applying thermal energy to the coil.

54. The process according to claim 52, wherein the forming a plurality of joining elements comprises applying laser energy to the coil.

55. The process according to claim 52, wherein the forming a plurality of joining elements comprises applying laser diode soldering to the coil.

56. The process according to claim 52, wherein the forming a plurality of joining elements includes forming at least 10 elements disposed along the coil length.

57. The process according to claim 52, wherein the forming a plurality of joining elements includes forming a non-uniform joining element pattern along the coil length.

58. The process according to claim 57, wherein the forming a plurality of joining elements includes forming a plurality of joining elements that has a density of joining elements per unit coil length that decreases along the coil length.

59. The process according to claim 52, wherein the forming a plurality of joining elements includes forming a uniform joining element pattern along the coil length.

60. The process according to claim 52, wherein the forming a plurality of joining elements includes forming a plurality of joining elements wherein each joining element couples 3 to 10 coil windings.

61. The process according to claim 52, wherein the forming a plurality of joining elements includes forming discrete elements wherein each discrete element is aligned orthogonal to the windings.

62. The process according to claim 52, wherein the forming a plurality of joining elements includes forming discrete elements wherein each discrete element has a width of 0.1 to 0.5 mm and a length of 0.1 to 1.5 mm.

63. A product produced by the process of claim 52.